INDOOR AIR QUALITY ASSESSMENT DURING CONSTRUCTION
August, 2014

WINCHESTER HIGH SCHOOL
80 Skillings Road
Winchester, MA 01890

Prepared For:

Mr. Matthew Robbins
Assistant Project Manager
Consigli Construction
72 Sumner St
Milford, MA 01757

Prepared By:

Zachary Keefe
Cashins & Associates
599 North Avenue, Suite 8
Wakefield, MA 01880

Job #: 5316

September 8, 2014

Contents

1. EXECUTIVE SUMMARY

BACKGROUND

Consigli retained Cashins & Associates, Inc., to perform an indoor air quality (IAQ) assessment at areas adjacent to Phase I of the project at the Winchester High School in Winchester, Massachusetts. This testing was conducted in order to determine whether various IAQ parameters were in compliance with the project's Indoor Air Quality Management Plan.

SCOPE OF WORK

On September 5, 2014, a Senior Indoor Air Quality Consultant from Cashins & Associates performed a follow-up round of air sampling throughout the Winchester High School. This was performed in order to obtain data while students and staff were occupying the building.

Measurements were taken for the following:

- Carbon Dioxide
- Temperature
- Relative Humidity
- Carbon Monoxide
- Volatile Organic Compounds (VOCs)
- Dust

FINDINGS

Real-time readings for CO, VOCs, dust, and CO_2 were all below upper limits set forth in the IAQ Management Plan.

2. INTRODUCTION

Cashins & Associates, Inc. was retained by Consigli to provide professional industrial hygiene consulting services. Our scope of work consisted of measuring various basic indoor air quality parameters during construction activities at Winchester High School in Winchester, Massachusetts. This assessment took place on September 5, 2014, and focused on areas adjacent to Phase I of the project. This assessment was performed at this time in order to obtain indoor air quality data while students, faculty, and staff were occupying the building.

3. INDOOR AIR QUALITY PARAMETERS

The following is a breakdown of upper limits related to indoor air quality as stipulated in section 01 81 19 of the Project Specification:

Analyte	Upper Limit
Airborne dust	150 µg/m^3 (Occupied), 500 µg/m^3 (Work Area)
Volatile Organic Compounds (VOCs)	5 ppm (5,000 ppb)
Carbon Monoxide (CO)	9 ppm

4. METHODOLOGIES

A TSI Q-Track indoor air quality meter was used to measure carbon dioxide, carbon monoxide, temperature, and relative humidity in the space. The range of measurements obtained is reported in Table 1.

A RAE Instruments part per billion photo-ionization detector (PID) was utilized to screen the school building for the presence of TVOC. The PID is a screening tool that provides information as to total volatile organic compound loading in the space. The instrument does not provide information pertaining to which specific compounds are present in the air.

Dust concentrations were measured using a MIE pDR-1000AN passive air sampler. This real-time aerosol monitor measures both respirable and thoracic fractions, with optimal responses to particles in the 0.1-10 micron size range. The monitor was zeroed on June 19, 2014 prior to the monitoring event by using a hand-inflatable "zero air" pouch in conjunction with an inlet filter cartridge.

5. FINDINGS

5.1 Findings: Basic IAQ Parameters

We have listed in Tables 1 through 3 the results of the real-time air sampling. Three rounds of sampling were conducted at various times of the day in order to gain a more representative data set.

Table 1: Real-time Air Quality Readings

Location	*CO_2 (ppm)*	*CO (ppm)*	*TVOC (ppb)*	*Dust ($\mu g/m^3$)*
1st floor				
Main office	1001	0.1	48	34
Hall @ A101	778	<0.1	<1	39
B101	592	<0.1	142	19
@ Art	625	< 0.1	100	38
@ Photography	724	<0.1	126	84
Cafeteria	771	<0.1	273	46
@ Library	994	<0.1	296	78
2nd floor				
C208	520	<0.1	<1	15
@C212	728	<0.1	15	69
@C207	670	<0.1	<1	12
@ Faculty Bathroom	865	<0.1	1343	32
@C202	1092	<0.1	59	14
@B209	1007	<0.1	486	60
@B207	767	<0.1	273	41
@B201	832	<0.1	89	40
@B202	796	<0.1	123	30
@A211	1019	<0.1	41	69
@A282	1096	<0.1	73	109
@A201	1087	<0.1	120	17
@A202	1237	<0.1	92	22
3rd Floor				
@A300	585	<0.1	7	26
@A307	598	<0.1	<1	22
A305	396	<0.1	<1	19
@B302	641	<0.1	<1	17
@B308	463	<0.1	<1	18
B306	423	<0.1	<1	23
@C304	634	<0.1	10	19
@C301	644	<0.1	<1	27
@C310	771	<0.1	8	31
@C312	575	<0.1	<1	40
@C310	400	<0.1	<1	32
C308	400	<0.1	<1	32

6. DISCUSSION

Real-time readings for dust, CO, VOCs, and CO_2 were all below upper limits set forth in the IAQ Management Plan.

No significant construction-related odors were detected at the time of this assessment.

Indoor air quality will be monitored on a regular basis by Cashins & Associates throughout this project in order to ensure that concentrations of various airborne contaminants remain at acceptable levels.

Please call if you have any questions or if we can be of further assistance.

Sincerely,
Cashins & Associates, Inc.

Zachary Keefe, CIE
Senior Indoor Air Quality Consultant